Q16 series

Ø16 mm panel mount LED indicators

DISTINCTIVE FEATURES

- Secret until lit polycarbonate decals or custom engraving
- 10 mm colored diffused epoxy lens or 10 mm water clear super bright LEDs
- (2.8 x 0.8) solder lug/faston terminals, pins or (200 mm long) wire terminations

ENVIRONMENTAL SPECIFICATIONS

- IP67 sealing option (EN60529)
- Operating & Storage Temperature Range:
  - Rear plastic body: -30 °C to +65°C (-22 °F to +149 °F)
  - Rear epoxy body: -40 °C to +85°C (-40 °F to +185 °F)

GENERAL SPECIFICATIONS

- Max Reverse Voltage: 5 V
- Viewing Angle: 30–100° (dependant on model)
- Life Expectancy: 100,000 hours
- Torque: 75 cNm (dependent on option)
- Maximum panel thickness 11 mm

MATERIALS

- Plated brass bezel finished in bright chrome, black chrome or satin grey and moulded polycarbonate rear body

The company reserves the right to change specifications without notice.
All LED characteristics are dependent upon environmental conditions. Therefore published data should be considered nominal and subject to variations.
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ELECTRICAL SPECIFICATIONS

STANDARD LED INTENSITY

<table>
<thead>
<tr>
<th>Voltage (Min to Max)</th>
<th>Operating Voltage (Typical All Types)</th>
<th>Operating Current</th>
</tr>
</thead>
<tbody>
<tr>
<td>02 (No Resistor)</td>
<td>1.8 to 3.3 VDC</td>
<td>20 mA max*</td>
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<td>6 VDC</td>
<td>5.4 to 6.6 VDC</td>
<td>20 mA</td>
</tr>
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<td>12 VDC</td>
<td>10.8 to 13.2 VDC</td>
<td>20 mA</td>
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<td>24 VDC</td>
<td>21.6 to 26.4 VDC</td>
<td>20 mA</td>
</tr>
<tr>
<td>28 VDC</td>
<td>25.2 to 30.8 VDC</td>
<td>20 mA</td>
</tr>
<tr>
<td>110 VAC</td>
<td>99 to 121 VAC</td>
<td>6 mA</td>
</tr>
<tr>
<td>220 VAC</td>
<td>207 to 235 VAC</td>
<td>3 mA</td>
</tr>
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* Customer to supply resistor for desired operating current.

LED COMPONENT SPECIFICATIONS

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* Customer to supply resistor for desired operating current.

STANDARD LED INTENSITY

<table>
<thead>
<tr>
<th>LED COMPONENT SPECIFICATIONS</th>
<th>Prominent and Recessed</th>
<th>Flush</th>
<th>Forward Voltage</th>
</tr>
</thead>
<tbody>
<tr>
<td>HE Red</td>
<td>80 mcd</td>
<td>10 mcd</td>
<td>2.0 V</td>
</tr>
<tr>
<td>Green</td>
<td>60 mcd</td>
<td>5 mcd</td>
<td>2.2 V</td>
</tr>
<tr>
<td>Yellow</td>
<td>50 mcd</td>
<td>4 mcd</td>
<td>2.1 V</td>
</tr>
<tr>
<td>Blue</td>
<td>540 mcd</td>
<td>100 mcd</td>
<td>3.3 V</td>
</tr>
<tr>
<td>White</td>
<td>1,000 mcd</td>
<td>150 mcd</td>
<td>3.3 V</td>
</tr>
<tr>
<td>Orange</td>
<td>80 mcd</td>
<td>200 mcd</td>
<td>2.2 V</td>
</tr>
<tr>
<td>Bi-color (Typical) (Red/Green)</td>
<td>15/15 mcd</td>
<td>14/10 mcd</td>
<td>2.0 V/2.2 V</td>
</tr>
<tr>
<td>Tri-color (Typical) (Red/Green/Yellow)</td>
<td>60/50/50 mcd</td>
<td>15/10/30 mcd</td>
<td>2.0 V/2.2 V/2.1 V</td>
</tr>
</tbody>
</table>

Bi-color - The color is changed by reversing the polarity of the supply voltage. Tri-color - The indicator has red and green LEDs, when both connected yellow is produced.

SUPER BRIGHT LED INTENSITY

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<th>Prominent and Recessed</th>
<th>Flush</th>
<th>Forward Voltage</th>
</tr>
</thead>
<tbody>
<tr>
<td>HE Red</td>
<td>17,000 mcd</td>
<td>2000 mcd</td>
<td>2.2 V</td>
</tr>
<tr>
<td>Green</td>
<td>11,000 mcd</td>
<td>680 mcd</td>
<td>3.5 V</td>
</tr>
<tr>
<td>Yellow</td>
<td>4,000 mcd</td>
<td>350 mcd</td>
<td>2.3 V</td>
</tr>
<tr>
<td>Blue</td>
<td>2,500 mcd</td>
<td>250 mcd</td>
<td>3.3 V</td>
</tr>
<tr>
<td>White</td>
<td>4,400 mcd</td>
<td>250 mcd</td>
<td>3.3 V</td>
</tr>
<tr>
<td>Orange</td>
<td>2,800 mcd</td>
<td>300 mcd</td>
<td>2.1 V</td>
</tr>
</tbody>
</table>

HYPER BRIGHT LED INTENSITY

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<thead>
<tr>
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<th>Prominent and Recessed</th>
<th>Flush</th>
<th>Forward Voltage</th>
</tr>
</thead>
<tbody>
<tr>
<td>HE Red</td>
<td>2,800 mcd</td>
<td>800 mcd</td>
<td>2.0 V</td>
</tr>
<tr>
<td>Green</td>
<td>2,200 mcd</td>
<td>250 mcd</td>
<td>3.2 V</td>
</tr>
<tr>
<td>Yellow</td>
<td>1,300 mcd</td>
<td>250 mcd</td>
<td>2.0 V</td>
</tr>
<tr>
<td>Orange</td>
<td>850 mcd</td>
<td>200 mcd</td>
<td>2.1 V</td>
</tr>
</tbody>
</table>

ADDITIONAL INFORMATION ON LED COMPONENTS

- Bi-color leds, by connecting the gold faston (+) one color is produced, by reversing the supply voltage another color is produced – bi-colors are available up to 28 VDC
- The tri-color led has red and green leds when both are connected yellow is produced

- The operating voltage must not be exceeded by more than 10% as this will result in reduced life expectancy
- Luminous intensity is measured at 20 mA on a discrete led unless otherwise stated.
- Luminous intensities and color shades of white LEDs may vary within a batch.
- Luminous intensity will be reduced with lower operating current.
## Q16 series

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### BUILD YOUR PART NUMBER

<table>
<thead>
<tr>
<th>SERIES</th>
<th>MOUNTING HOLE</th>
<th>BEZEL STYLE</th>
<th>TERMINALS</th>
<th>BEZEL FINISH</th>
<th>TYPE OF ILLUMINATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q16</td>
<td>Ø16 mm</td>
<td>P</td>
<td>Metal</td>
<td>C</td>
<td>XX Fixed light</td>
</tr>
<tr>
<td></td>
<td></td>
<td>R</td>
<td>Prominent</td>
<td>B</td>
<td>KK Flashing light (12 V – 28 VDC)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>F</td>
<td>Recessed</td>
<td>G</td>
<td>YY Bi-color</td>
</tr>
<tr>
<td></td>
<td></td>
<td>PP</td>
<td>Plastic</td>
<td>BP</td>
<td>ZZ Tri-color</td>
</tr>
<tr>
<td></td>
<td></td>
<td>FP</td>
<td>Prominent</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### LED COLOR

- **R**: Red
- **G**: Green
- **Y**: Yellow
- **B**: Blue
- **W**: White
- **O**: Orange
- **HR**: Hyper bright Red
- **HG**: Hyper bright green
- **HY**: Hyper bright yellow
- **HY**: Hyper bright orange
- **HO**: Hyper bright orange
- **SR**: Super bright Red
- **SB**: Super bright blue
- **SW**: Super bright white
- **RG**: Red/green
- **RY**: Red/yellow
- **GY**: Green/yellow
- **RYG**: Red/yellow/green
- **SY**: Super bright yellow

### VOLTAGE

- **02**: no resistor*(Blank)
- **06**: 6 VDC
- **12**: 12 VDC
- **12A**: 12 VAC/DC
- **24**: 24 VDC
- **24A**: 24 VAC/DC
- **28**: 28 VDC
- **28A**: 28 VAC/DC
- **110**: 110 VAC
- **220**: 220 VAC

### SEALING

- **E**: Unsealed
- **IP67**: See end of series

### CUSTOM OPTIONS

- **HR**: Hyper bright Red
- **HG**: Hyper bright green
- **HY**: Hyper bright yellow
- **HY**: Hyper bright orange
- **HO**: Hyper bright orange
- **SR**: Super bright Red
- **SB**: Super bright blue
- **SW**: Super bright white
- **RG**: Red/green
- **RY**: Red/yellow
- **GY**: Green/yellow
- **RYG**: Red/yellow/green
- **SY**: Super bright yellow

### ABOUT THIS SERIES

**Notice**: please note that not all combinations of above numbers are available.

- **Gold faston terminal denotes anode (+), silver terminal denotes cathode (-)**
- **Standard wire length is 200 mm, 22 AWG UL1007, red wire denotes anode (+), black wire denotes cathode (-) for other wire lengths consult APEM**
- **Take care when soldering to the faston terminals (recommended solder temperature 300 °C - 3 sec)**
- **Short body pins and wires are only available up to 28 VDC**
- **Standard tri-color faston terminals are two anodes (+) and one cathode (-)**
- **Tri-color wires are one red (+) and one green (+) anode and one black (-) cathode**
- **Tri-color pins are center (–) cathode, shortest (+) anode pin green, longest (+) anode pin red**
- **We recommend using hyperbright or superbright leds for use at 110 VAC and 220 VAC**
- **For leds with alternative voltages and for multi-voltage options please consult APEM**

*(please refer to the forward voltage in electrical specifications)*
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PROMINENT BEZEL

WIRES

REAR EPOXY WIRES

SHORT BODY WIRES

SOLDER LUG/FASTON

PINS

REAR EPOXY PINS

SHORT BODY PINS
Q16 series

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**FLUSH BEZEL**

**Wires**

- M16x1,0
- 200.0 +/- 10 (7.874 +/- 0.393)
- 2.8 x 0.8 [0.01 x 0.031]
- 10.00 [0.394]
- 2.00 [0.079]
- 13.50 [0.531]
- 28.60
- 1.126

**Solder Lug/Faston**

**Pins**

- M16x1,0
- 200.0 +/- 10 (7.874 +/- 0.393)
- 7.00 [0.276]
- 2.00 [0.079]
- 13.50 [0.531]
- 28.60
- 1.126

**Rear Epoxy Wires**

- M16x1,0
- 2.00 [0.079]
- 13.50 [0.531]
- 17.35 [0.683]

**Rear Epoxy Pins**

- M16x1,0
- 18.25 [0.719]
- 16.75 [0.659]

**Short Body Wires**

- M16x1,0
- 19.60 [0.772]

**Short Body Pins**

- M16x1,0
- 16.00 [0.630]
Q16 series

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RECESSED BEZEL

WIRES

SOLDER LUG/FASTON

REAR EPOXY WIRES

PINS

SHORT BODY WIRES

REAR EPOXY PINS

SHORT BODY PINS
CUSTOM ENGRAVING

Some common codes are listed above, for your custom requirements please contact APEM. Unless specified standard engraving with white infill will be supplied. Suffix the part number with legend code:

- High beam -0AJ
- Low beam -097
- Rear fog -027
- Front fog -026
- Windscreen wiper -021
- Windscreen washer -022
- Ventilator fan -023
- Turn Signal -0AH
- Side lights -098
- Horn -041
- Hazard warning -013
- Heating -018
- Brake test -0BU
- Arrow -0K6
- Battery -0AG
- Oil can -0GP
- Windscreen heating -020
- ABS -086
- Engine coil -0EL
- Seat belt -0SB
- USB connection -0BU
- Steam -0ST
- ECU -0EU
- Side step -0AD
- Air con -012
- Engine -040
- Boot/Trunk Release -0BR
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SECRET UNTIL LIT POLYCARBONATE INSERTS

Some common codes are listed above, for your custom requirements please contact APEM. Please note Secret until lit inserts only available with flush metal bezel (Option F)
Suffix the part number with legend code:

- Turn signal -3AH
- Hazard -313
- Oil can -3GP
- Battery -3AG
- Rear fog -327
- Low beam -397
- Brake test -3BU

- Arrow -3K6
- High beam -3AJ
- Park brake -3PB
- Side lights -398
- Seat belt -3SB
- Type pressure -3TP
- Check engine -3CE

- Engine temperature -3EC
- Fuel -3FP
- Brake failure -3BF

CABLE LENGTH AND CONNECTOR

For custom cable length and connectors contact APEM.